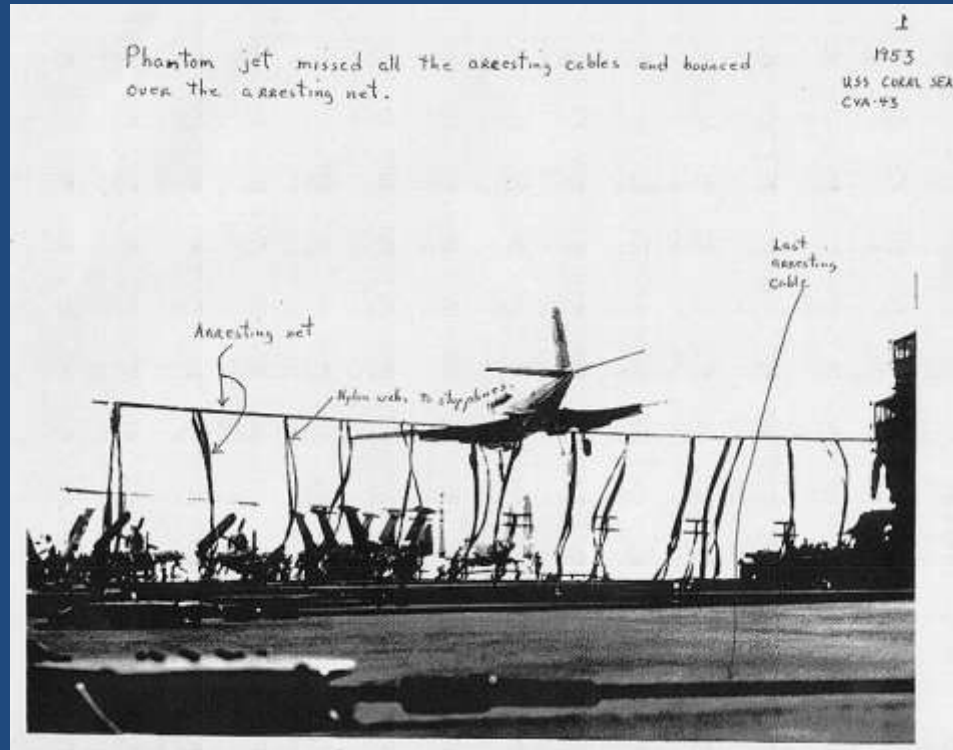


# Barriers to Innovation



## A Social History of Naval Aviation

CAPT Barney Rubel, USN (ret)

# Agenda

- Distraction – Why the Navy did not invent the angled deck and steam catapult
- Resistance – Why it took so long for naval aviation to get down to USAF accident rates
- Preoccupation – Why the fleet battle experiment program ended

# Themes

- Struggle against Air Corps/USAF
- Corporate Culture
- Operational Environment
- Service Fragmentation

The Good Old Days



# Naval Aviation 1.0

1911 - 1942

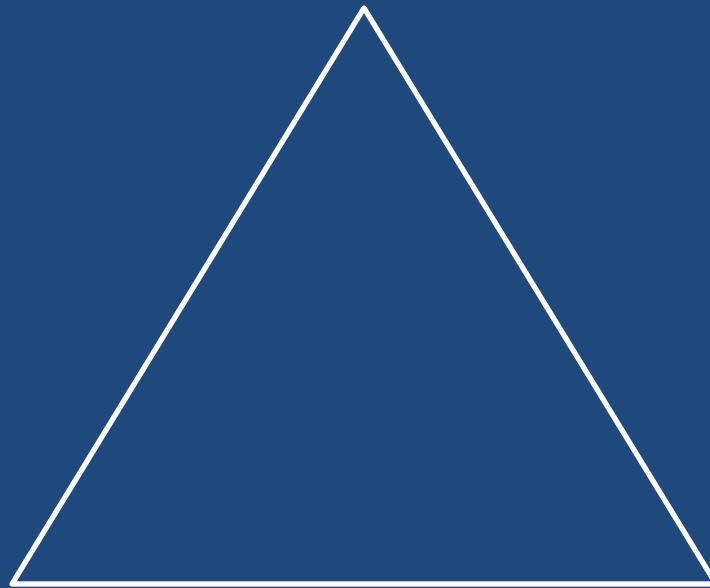
# Characteristics of NA 1.0

- Open-minded and experimental
  - No established “baronies” protecting equities
  - Founding theory emanating from NWC
- Sub-specialty
  - All officers surface line at heart
  - Permitted accession of senior battleship officers
- Focused
  - The US Fleet was in home waters and available for experimentation
  - Foreign developments provided impetus
  - General Board provided focus

# Innovation Triangle

OPNAV

RADM Bill Moffett  
BUAER



NWC

RADM William Sims

CAPT Joe Reeves

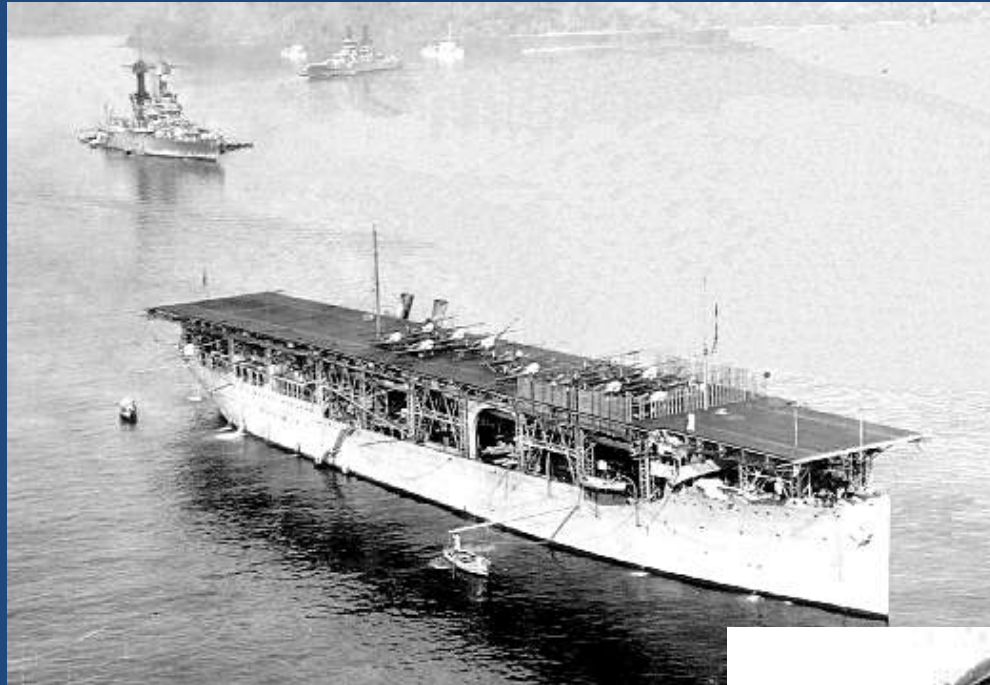
The Fleet

USS Langley



# The Evolution of Carrier Aviation

From this...



...to this







# Naval Aviation 2.0

1938-1945



# Characteristics of NA 2.0

- Focused on execution
  - Problem-solving innovation at tactical and technical levels
  - Explosive growth
- Transition to a community
  - Loss of “one Navy” outlook
- Creation of legends
  - Success in battle gave power to ethics/values
  - Increased loss rates reinforced “no tomorrow”

# Distraction

# Post-war Threats



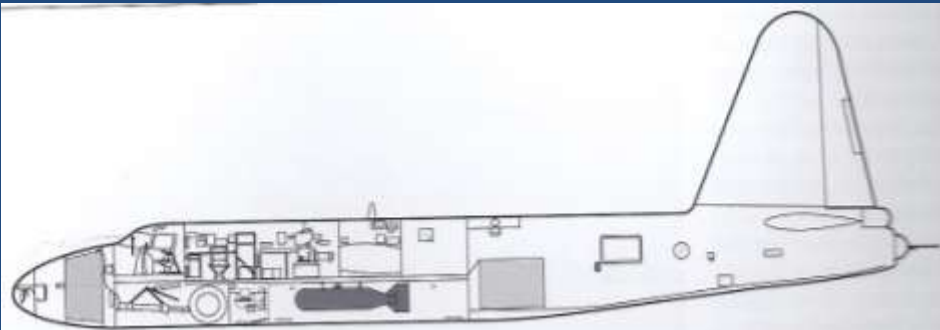
# Attack from the Air

The Russians have little or no navy; the Japanese navy has been sunk, the navies of the rest of the world are negligible; the Germans never did have much of a navy. The point I am getting at is who is the big navy being planned to fight. There are no enemies for it to fight, except apparently the Army Air Force. In this day and age to talk of fighting the next war on oceans is a ridiculous assumption.

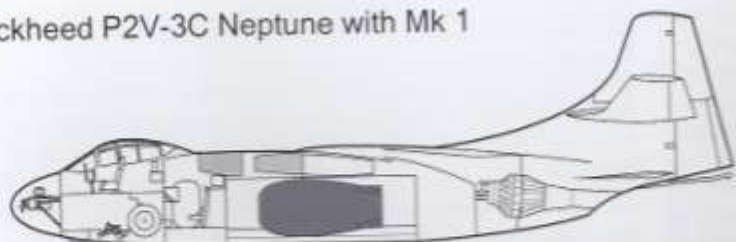
I see where some admiral on a carrier trip up around Greenland has announced that the voyage has proved that the larger carrier is essential to national defense in order to transport the atomic bomb. This is a false statement and assumption. There is only one airplane that can carry an atomic bomb; if they insist on an aircraft carrier, its flight deck will have to be 6000 feet long.

Carl Spaatz



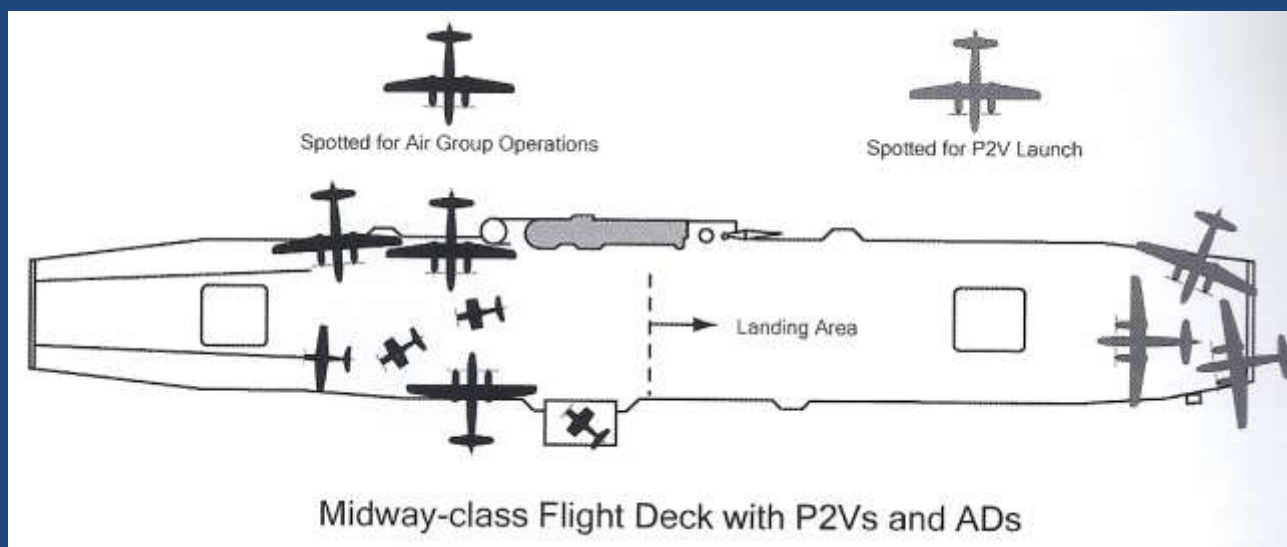


Lockheed P2V-3C Neptune with Mk 1



North American AJ-1 Savage with Mk 4

10 Feet

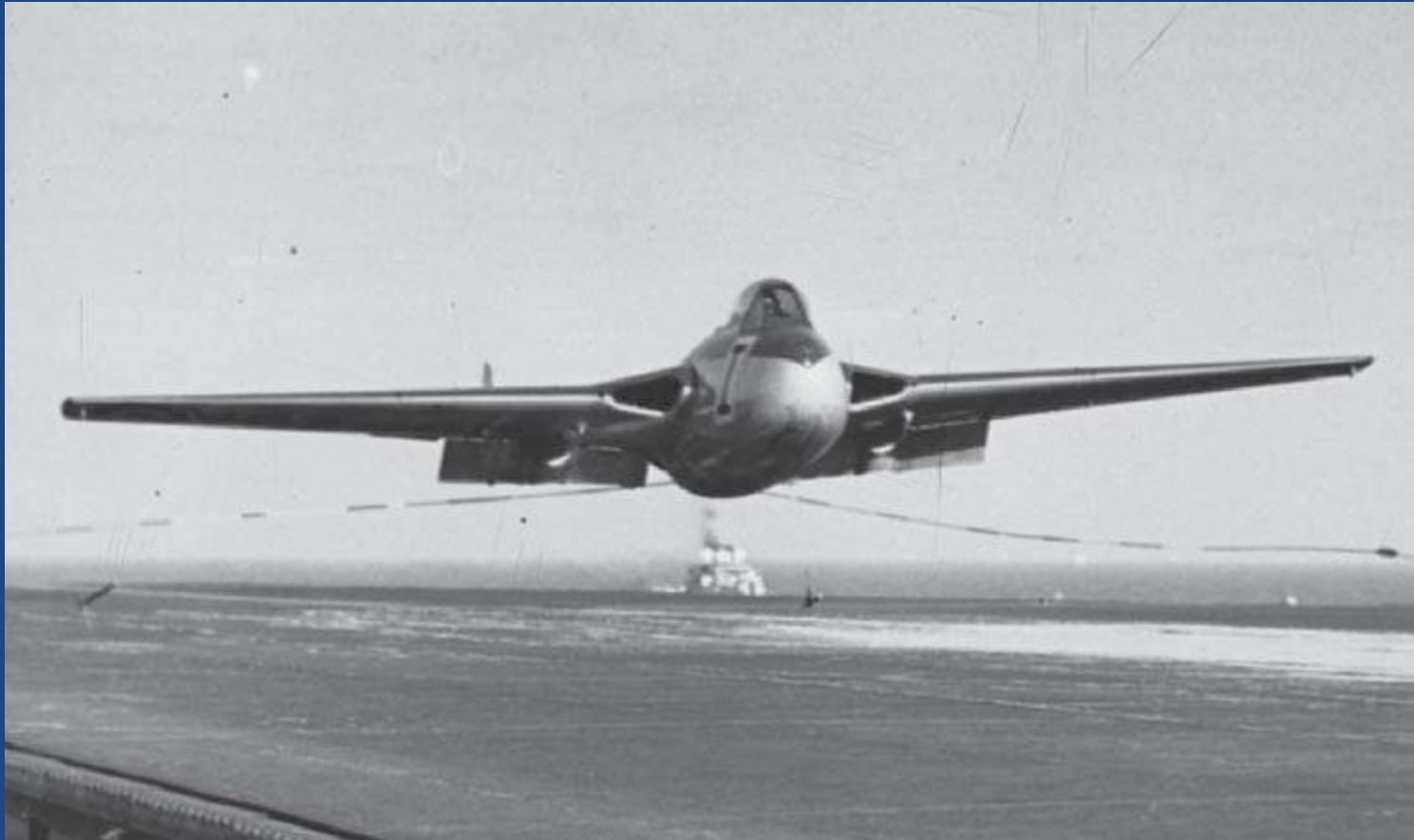




# Navy Innovation 1948



# Flex Deck





F-18C being readied for launch  
by steam catapult



# Why?

- USN focus: CV as a nuclear strike platform
- RN focus: CV as a convoy escort
- USN: Beset by challenge from USAF
- RN: Unification battle already fought
- USN: Sunk costs in hydraulic and explosive cats
- RN: Smaller establishment with fewer sunk costs

# Resistance

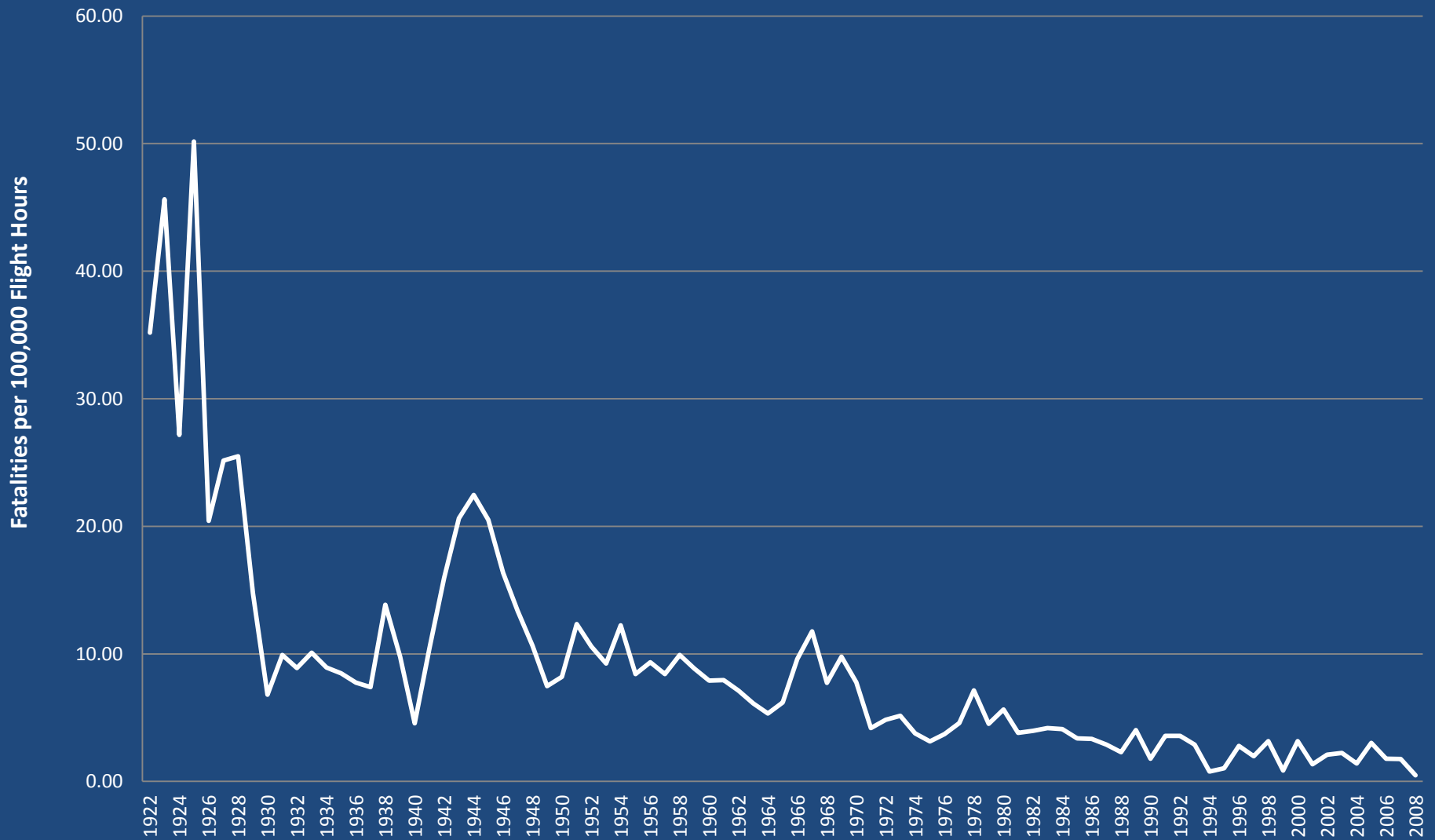


# Corporate Culture

- No Tomorrow



# Naval Aviation Mishap Fatality Rate 1922-2008





# Corporate Culture

- No Tomorrow
- Rugged Individualism
- Tribalism
- Struggle against the USAF



# Naval Aviation 3.0



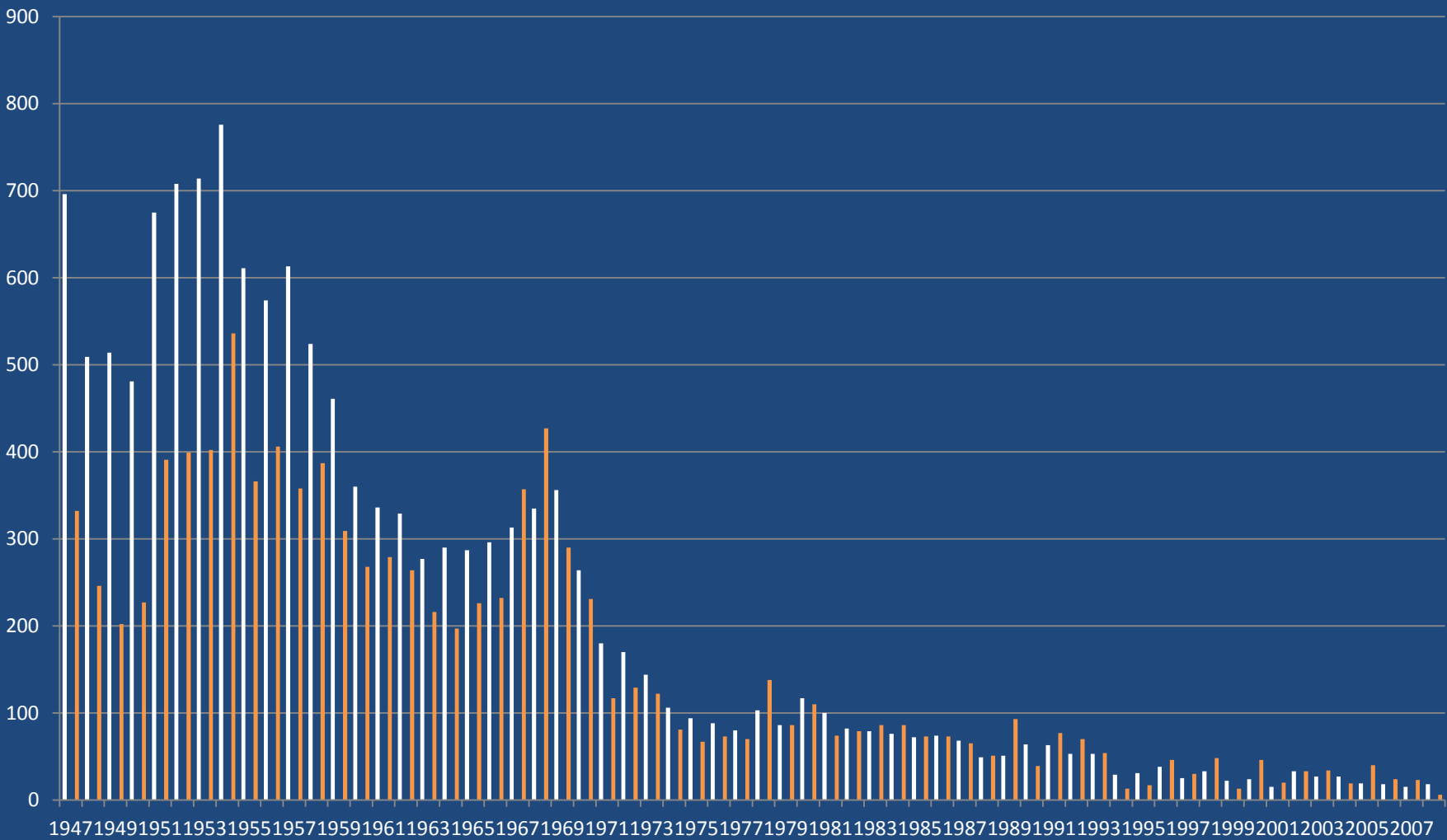
1945-1991



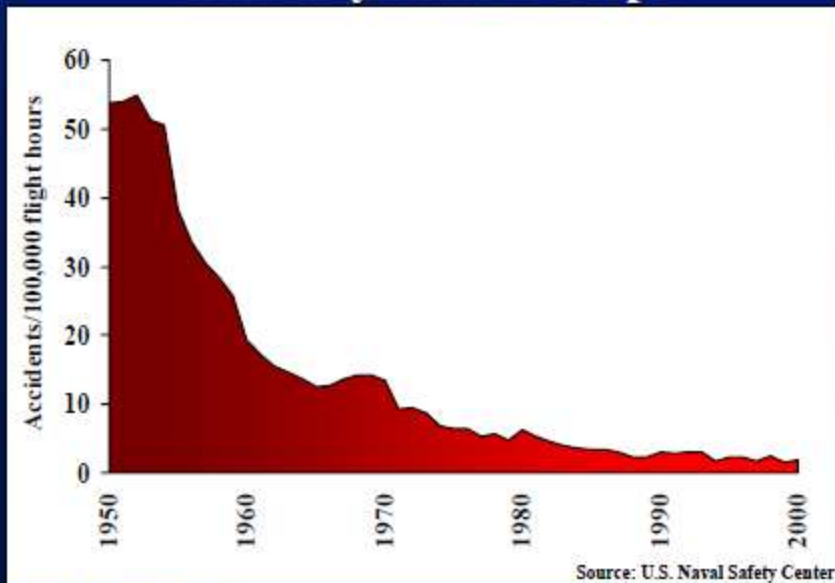
# Characteristics of NA 3.0

- Initially distracted and pressured
  - Focus on big planes carrying nukes
  - Unification battles
- Specialist community solidified
  - Increased technical demands of aviation
  - Ascendancy of aviation
- Risk tolerant
  - The legends of NA 2.0 provided justification
  - Nuclear and bureaucratic Armageddon possible

# Naval Aviation Aircraft Destroyed in Mishaps



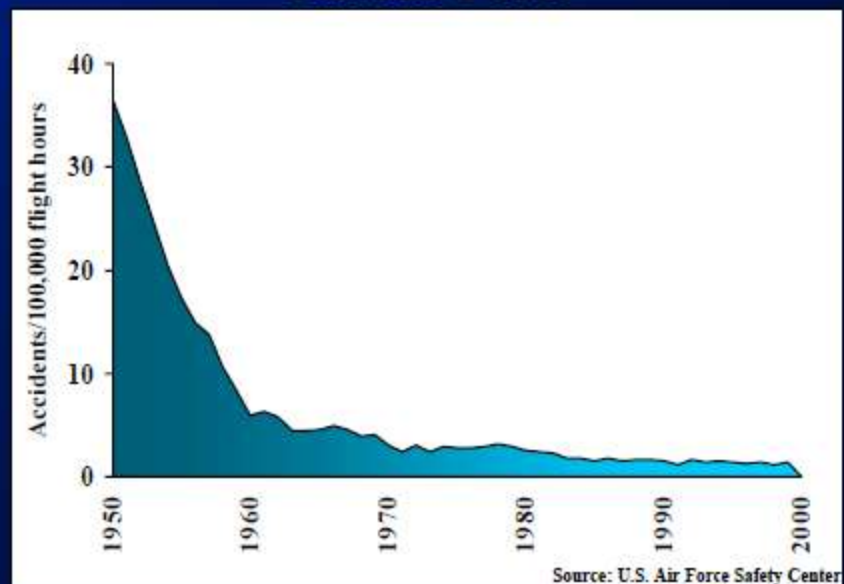
## U.S. Navy/Marine Corps



### Accident Rates

	USN	USAF
1950:	53	37
1960:	19	5
1970:	13	3
1980:	6	2
1990:	2	2

## U.S. Air Force





# A Tale of Two Services

- Both suffering catastrophic accident rates in 1951
- Both founded safety centers
  - USAF: 500+ people
  - Navy: 25 people
- Standardization determined to be key
  - USAF: Immediate implementation and enforcement
  - Navy: NATOPS not started until 1961 and did not take until at least 1971
- Tribal elder culture governed naval aviation
- Naval aviation unwilling to learn from USAF



# Naval Aviation 4.0

1991-????



# Characteristics of NA 4.0

- Depressurized
  - Role of naval aviation accepted
  - No immediate threats
  - Stable professional structure
- Mature approach to risk
  - Technology and organizational changes mitigated the “no tomorrow” mindset
  - Budget competition
- Insular
  - Naval Aviation “Enterprise”
  - Platform oriented – “defend the carriers”

# Preoccupation

# The FBE Program

It is likely that the Navy would find value in narrowing the focus of the complex experiments, which will also include “not to interfere” demonstrations. **Rather than try to do many things, at great expense and with insufficient designers, observers, or analysts, it would be better to focus on only a few initiatives and do them very well.** There must be assurance that this limited number of objectives are all well designed (with overall priorities and the ultimate analysis in mind), thoroughly observed and documented, and comprehensively analyzed. Additionally, each formal Fleet Battle Experiment should be part of a continuing mosaic, designed to build mounting improvement in capability beginning with the highest priority processes over a number of years.

**Fleet Battle Experiment Juliet  
Final Reconstruction and Analysis Report**

**Naval Postgraduate School**



# FBE Problems

- Superimposed on a busy fleet
- Little additional personnel or resource support to the numbered fleets
- Stressed organizations are conservative and risk averse
- Institutional resistance to Cebrowski ideology
- Many cooks with many agendas



# Lowering the Barriers

- Top level leadership sets the focus
  - Resurrect the General Board?
- Form an experimental staff
  - Depressurize the process: shield from operational and training responsibilities
- Wargame a lot
  - Partnership between N3N5, NWC, NWDC, NPS, MCWL, ONR
- Concepts are not programs
  - They should be subjected to wide debate and discussion



# Naval Aviation 5.0?

